Monitoring border resource impacts in Organ Pipe Cactus National Monument

by Ami Pate

MAPPING FOOTPRINTS, WATER JUGS, AND SALSA cans is an unusual new task for biologists in the Sonoran Desert borderlands of Arizona. After years of observing increasing resource impacts caused by migrants and smugglers, Organ Pipe Cactus National Monument developed a formal monitoring protocol to quantify the problem in 2002.

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Until the mid-1990s, Organ Pipe's 30-mile southern boundary was considered a tranquil stretch of the international border. Resource damage was light and sporadic, even though most of the monument's boundary land is accessible from Mexico by dirt roads or paved highway, with only a four-strand barbed-wire fence between the two countries to exclude livestock. Some vandalism of historic structures and wood cutting occurred close to the border, a few migrant trails were used seasonally, and drug smugglers were occasionally apprehended. Only a few Border Patrol agents and park rangers patrolled the area.

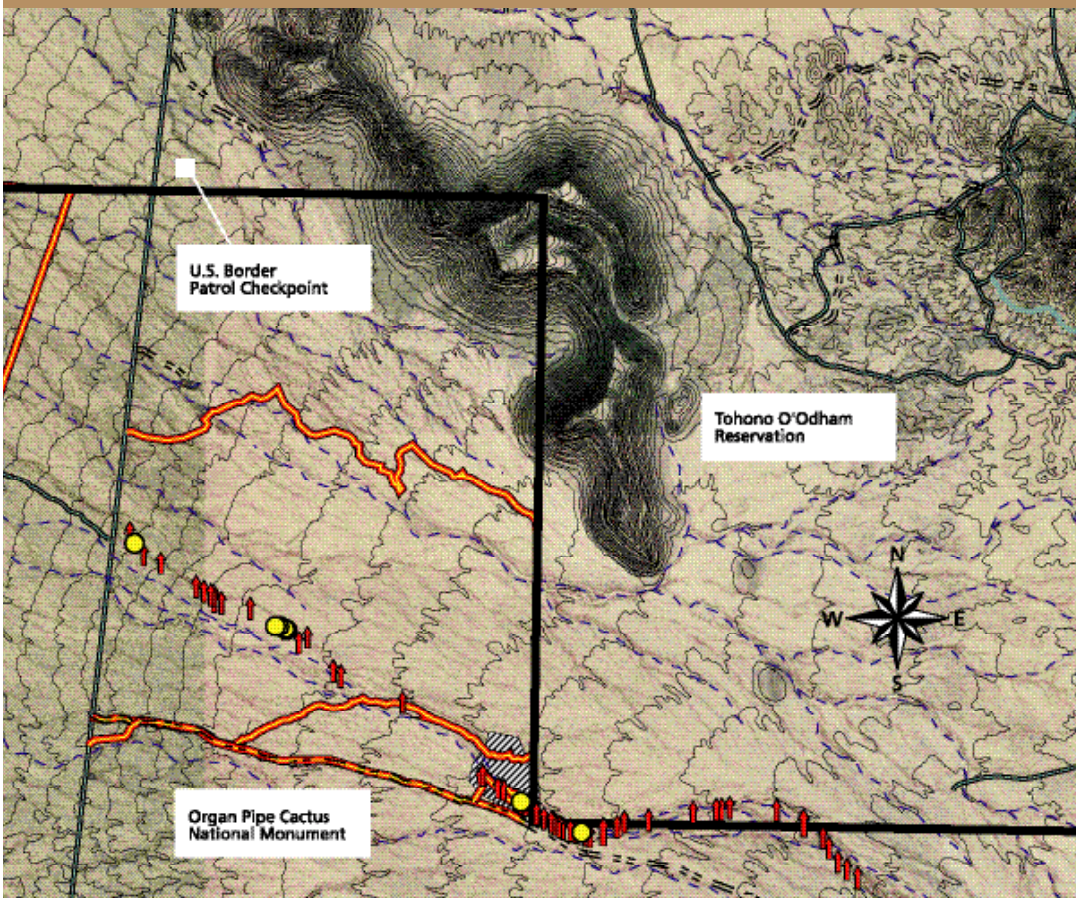
From 1993 to 1995 the Border Patrol launched a series of enforcement operations in El Paso, San Diego, and Nogales that effectively rerouted border crossers to remote southwestern desert lands, including the designated wilderness of Organ Pipe Cactus National Monument. In 2001 an estimated 200,000 people entered the monument from Mexico. In the same year, Organ Pipe law enforcement rangers seized 14,700 pounds of marijuana, more than in all other units of the National Park System combined. Park managers estimate that "unofficial" wilderness use exceeds permitted use by at least a hundredfold.

This unprecedented flow of illegal traffic and the subsequent increase in law enforcement activities have had devastating impacts on wilderness resources. Foot trails, discarded bottles, cans, and clothing are commonly found throughout the monument. Rest areas or "bivouac sites" are denuded of brush and cactus seedlings. Several highly used migrant and smuggler trails intersect important water holes and cultural resources. Habitats for endangered species such as Sonoran pronghorn and ferruginous pygmy owls are under siege. Off-road vehicle tracks, abandoned vehicles in fragile desert terrain, and graffiti on rocks and cacti are other examples of ongoing wilderness degradation that create a

NPS PHOTO

Scientific monitoring was expanded in 2002 and revealed a staggering amount of resource disturbance from illegal foot traffic and extensive off-road driving, including abandoned vehicles, trash, fire pits, and rest sites.

ILLEGAL IMMIGRATION ROUTES AND FERRUGINOUS PYGMY OWL BREEDING TERRITORY, ORGAN PIPE CACTUS NATIONAL MONUMENT



NPS MAP BY BRIAN BARNS, ADAPTED BY NATURAL RESOURCE INFORMATION DIVISION

Human competition for water sources used by wildlife such as the endangered Sonoran pronghorn is a concern of park managers, as are footpaths that cross breeding territory of the endangered ferruginous pygmy owl.

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need for daily foot, vehicle, and aerial patrols by a variety of law enforcement agencies.

With funding from the National Park Service's Mexican Affairs Office in spring 2002, Ecological Monitoring Program coordinator Bryan Milstead and cartographic technician Brian Barns designed a monitoring program to assess the extent of these border impacts. They established five east-west belt transects in the four geographic corners and center of the monument. One well-traveled, north-south migrant trail was also surveyed. A total of 100 kilometers (62 miles) was walked from January to March. All human disturbances encountered within 20 meters of the transect center line were mapped with a geographic positioning systems unit and described. When possible, resource managers walked the transects with law enforcement rangers, who contributed valuable professional experience in detecting the presence of human activity.

Data from this monitoring project are being used in GIS models and in educational presentations for interagency managers, scientists, and the public. In November 2002, resource management staff began the second round of transect data collection. Monitoring will be conducted semiannually to assess trends and patterns of backcountry impacts to assist managers in formulating strategies for protecting the monument's resources in the future. ■

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